LessonsLearnt2019

Best Practices for Quality Architecture

Mold Prevention

of the

Building Envelope

Ar. ANTHONY LEE TEE

Director, Accredited Building Inspector & Trainer

Architect Centre SB.

Kisah Benar

Property Inspections
Building Forensics

Malaysia's Leading
Property Inspection & Building
Advisory Service Provider

Architect centre

PAM PERTUBUHAN AKITEK MALAYSIA
MALAYSIAN INSTITUTE OF ARCHITECTS

Architect Centre Advanced Investigations & Building Forensics:

11 ns

Ar gs

Unsafe & Unsatisfactory Conditions

Architect centre

LiveWork

PlayLearn

Residential.Commercial.Industrial

Office, Hotel, Factory, Hospital
Shopping Malls
Universities, College, Hostels
Government Facilities & Infrastructure etc.

Strata Properties (Mixed-use)

KISAH BENAR

Changing Dynamics
Consumer Patterns

Design & Layout Density,
'TOD / COD'
Phased Completion
Sprawling Voids

Water Gas
Electricity, ACMV
Waste
Waterproofing
Glass

Management &
Maintenance


SALE
ANGEL
ANGEL

Mixed Strata Development

High density
Phased completion


3 in 1
VIVACITY
theborneopost.com
utusanborneo.com.my

4 in 1

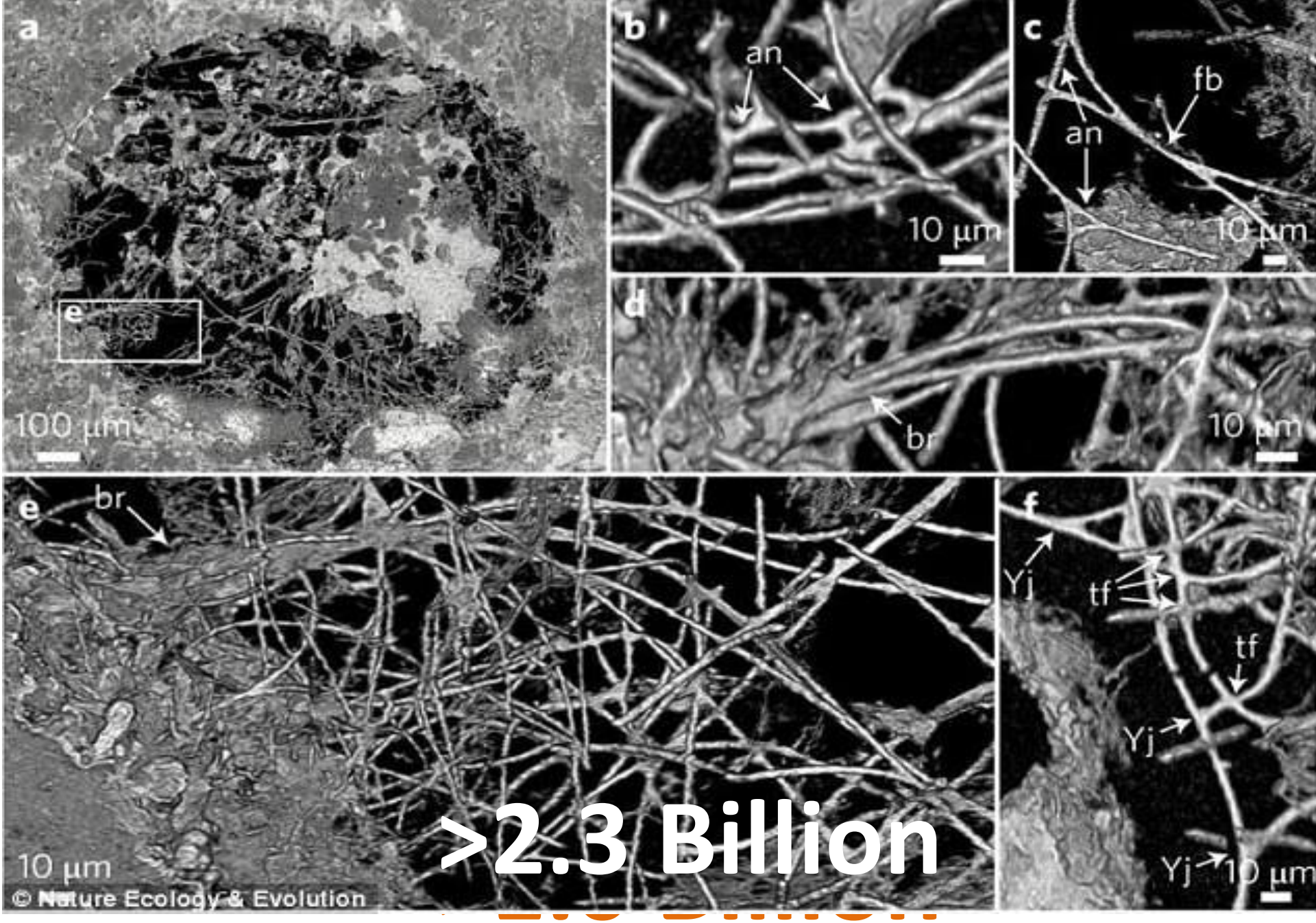
Malaysia: Typical building faults...

- Cracks to Masonry Walls
- Water Seepage and Leaks (Windows, Wet areas, Flat Roof)
- Mold & Fungus

- Electrical Deficiencies
- Fire Protection System & Escapes
- Plumbing, Waste Pipes
- Tiles, Paint, Waterproofing

- Illegal Extensions
- Unregulated alterations
- Bullshit Maintenance

Findings from 11 years of ACSB Inspections from 2008 - 2019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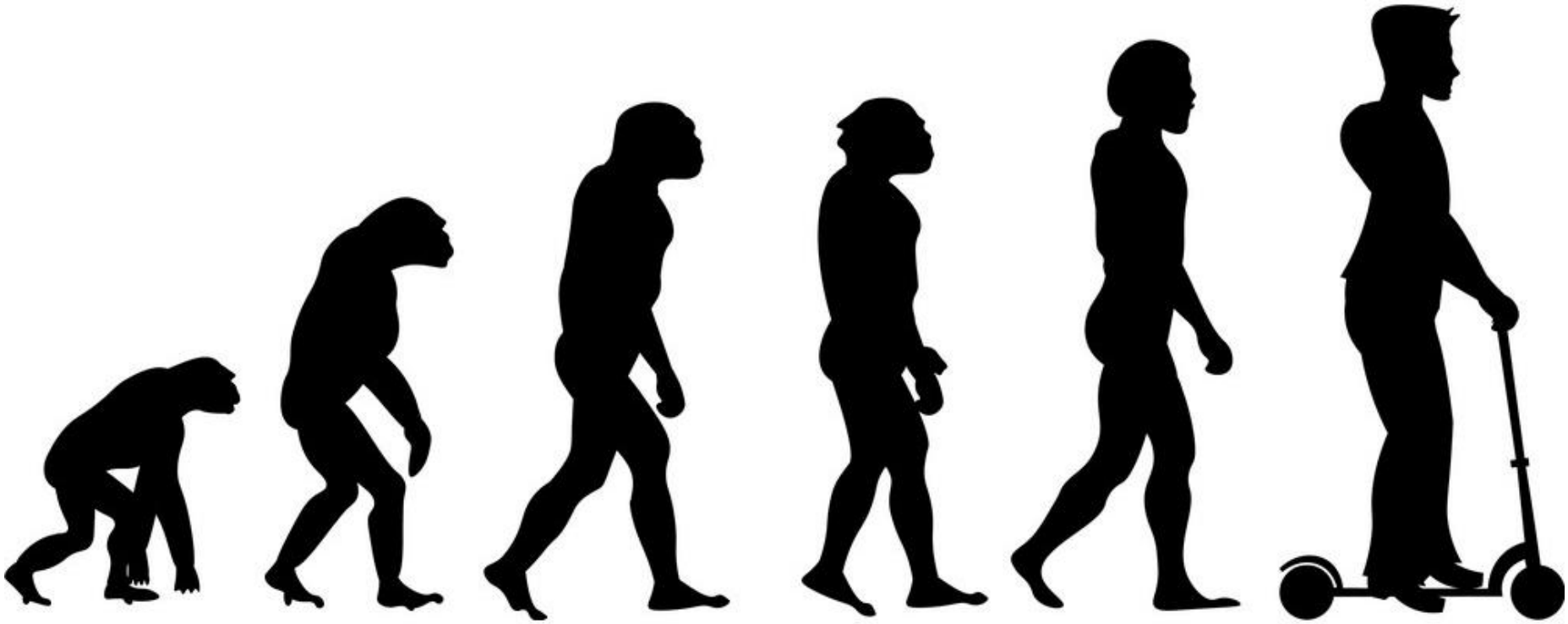
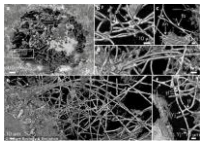
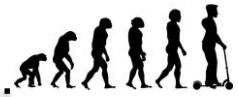
© Nature Ecology & Evolution

>2.3 Billion



100 million years



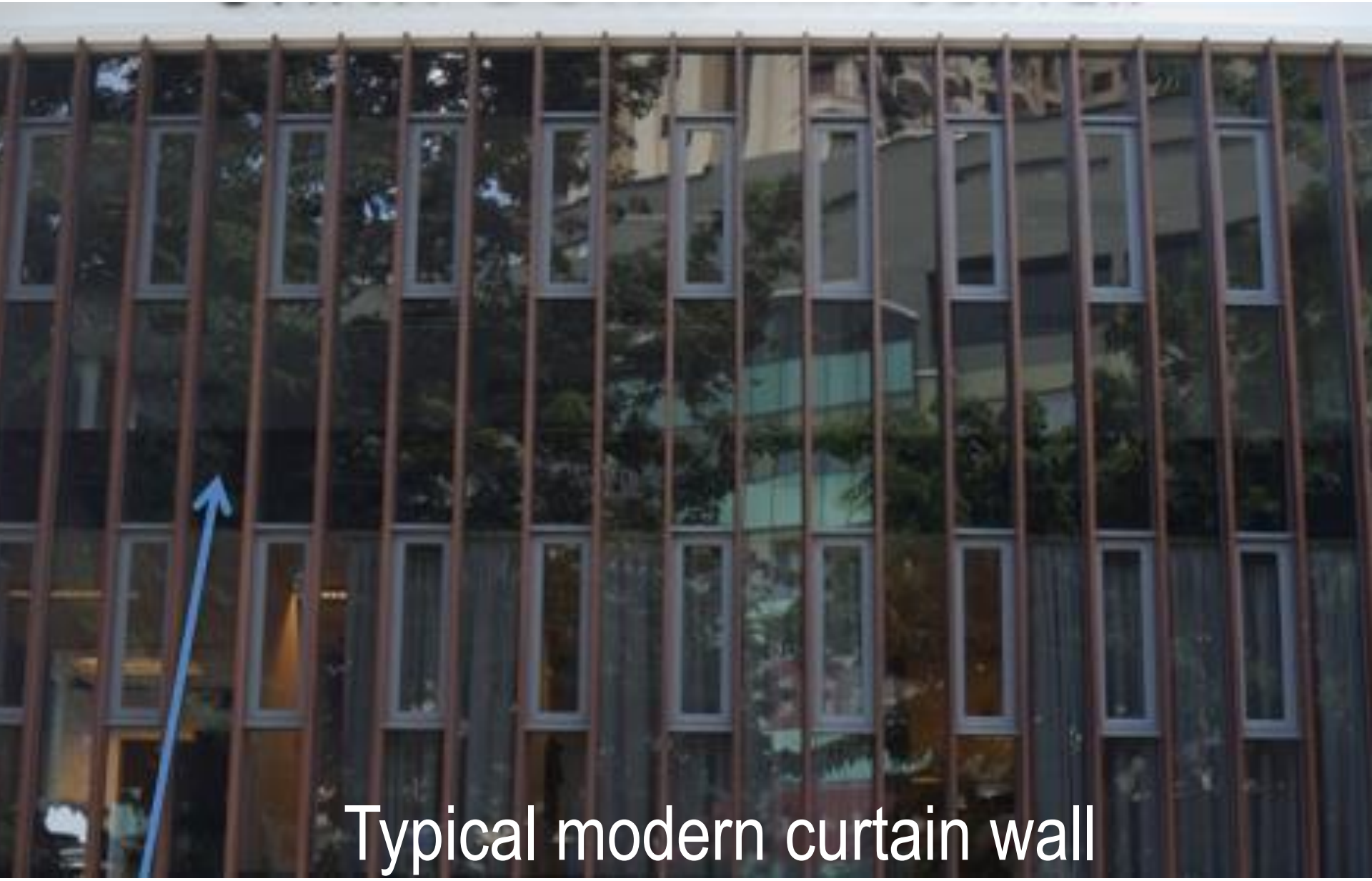


1 – 2.3 billion

100 million

Friend or foe


Typical modern cu
With mullions /



Typical modern curtain wall

With mullions / windows

penetrative rainwater thru windows / brickwall

penetrative rainwater
thru windows / brickwall

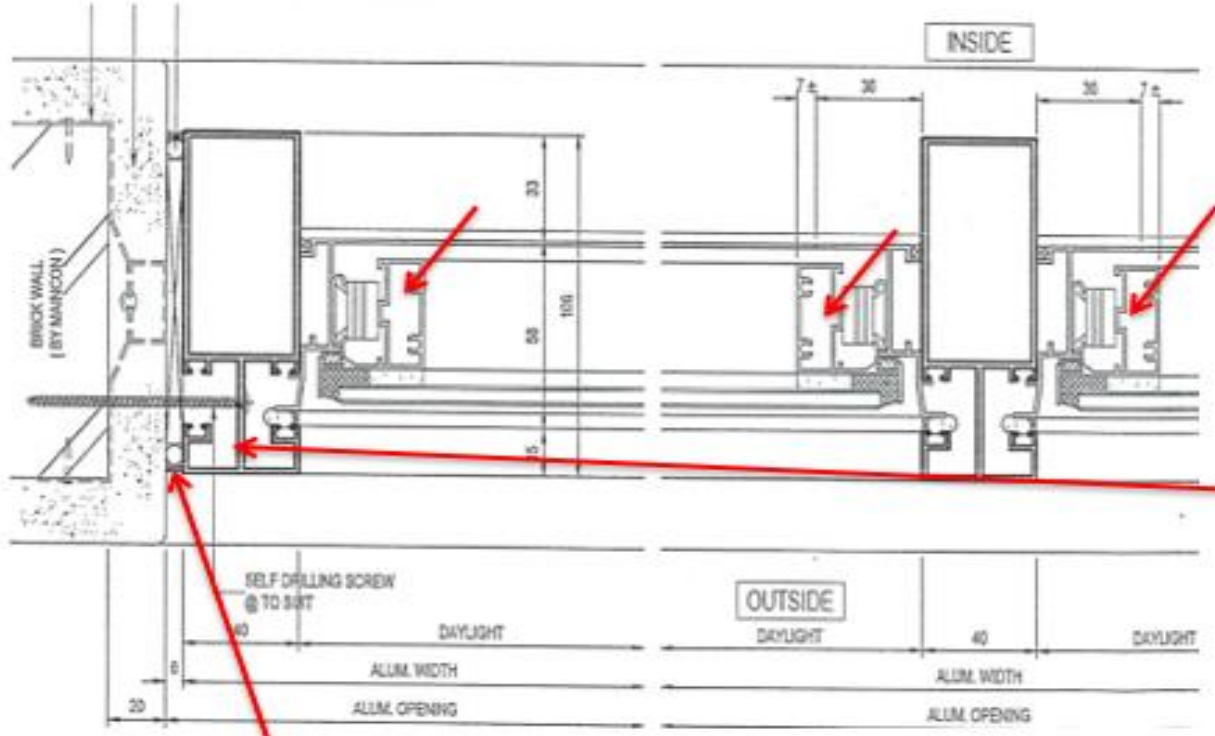
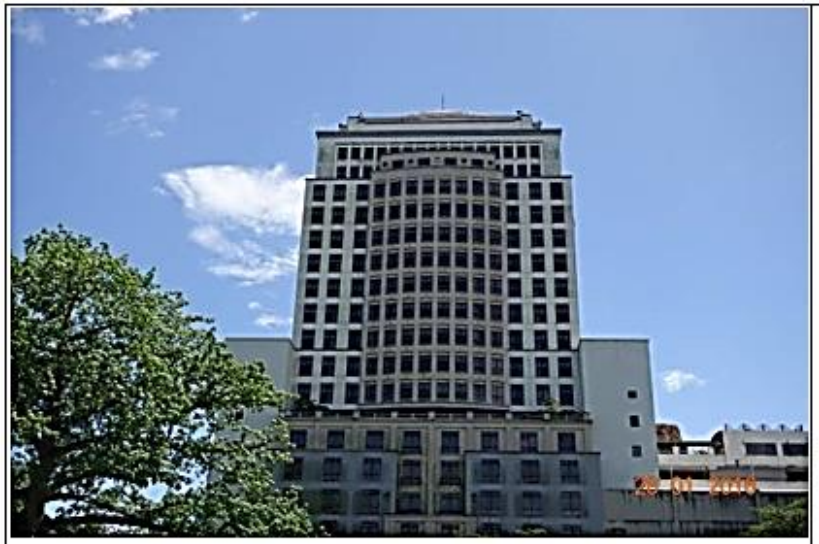
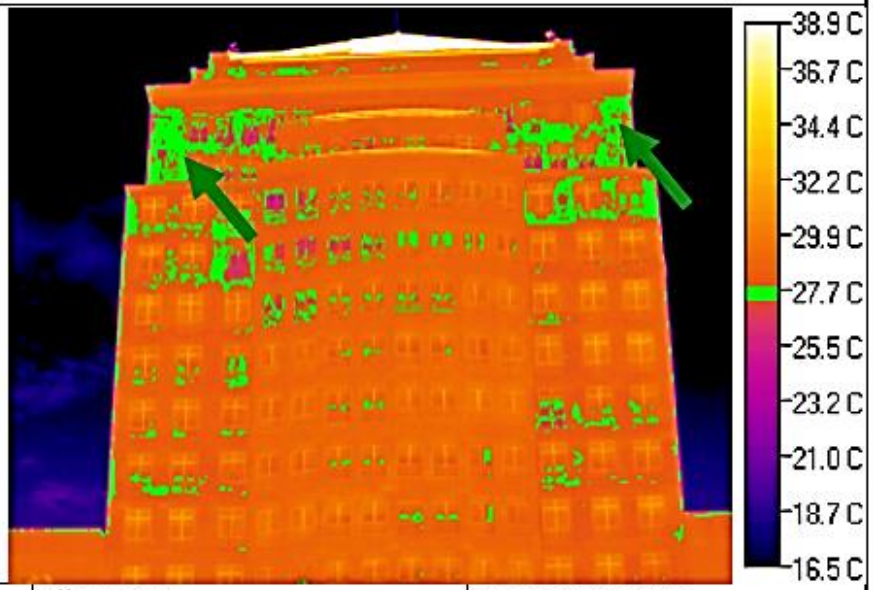


Fig 1.5 & 1.6: Typical Curtain Wall Glazing – Vertical Mullion and Operable Window profiles
(Note: Operable window does not match as-built condition)

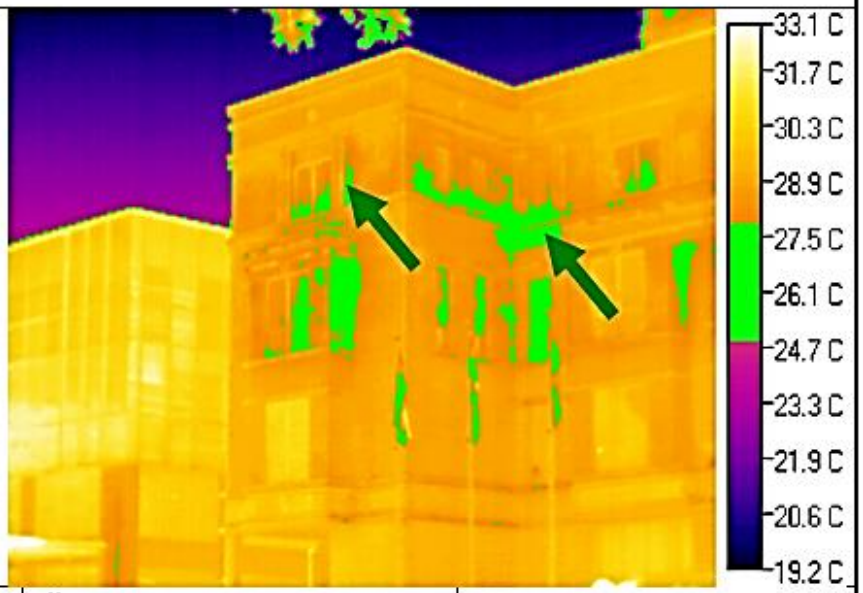
penetrative rainwater thru windows





Anomaly Area 77	28-Jan-2016 12:35:52 PM	File Name	MPKC0017.SIT
Remarks:	Traces of dampness (cold spot) detected at the time of scanning.		

Photo 1: Front Façade with anomalies indicating cold spots due to water seepage and leaks.



Anomaly Area 73	28-Jan-2016 12:28:03 PM	File Name	MPKC0014.SIT
Remarks:	Traces of dampness (cold spot) detected at the time of scanning.		


GBI ?

condensation on external masonry wall

WHY?

penetrative rainwater thru windows / brickwall


Giant
PARKSON
百盛
KAMDAR
Toys R Us

penetrative rainwater thru windows / brickwall

penetrative rainwater
thru windows / brickwall

penetrative rainwater
thru windows / brickwall / sill

penetrative rainwater thru operable windows

Sections of side-jamb mullions which are not weather sealed due to proximity to RC column

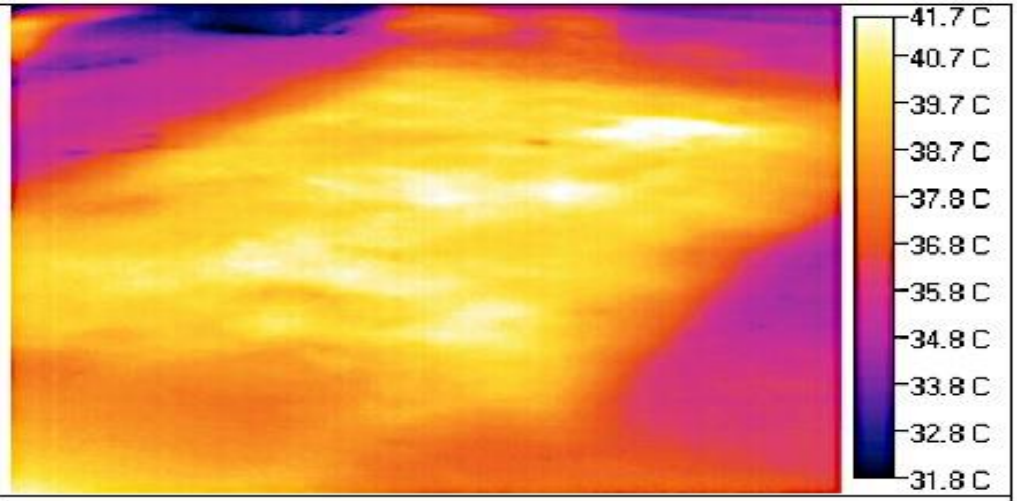
No access

penetrative rainwater
thru concrete roof

PU Grouting

short term fix

INFRARED THERMOGRAPHY IMAGING



penetrative rainwater under screeding

Anomaly Area 2	04-Sep-2017 03:34:19 PM	File Name	TH910002.SIT
Remarks:	Traces of dampness (cold spot) detected at the time of scanning.		

penetrative rainwater
thru concrete roof / services

Ph 32 : LMR

Fault Rating [XX]
Falling damp from external walls into LMR walls.

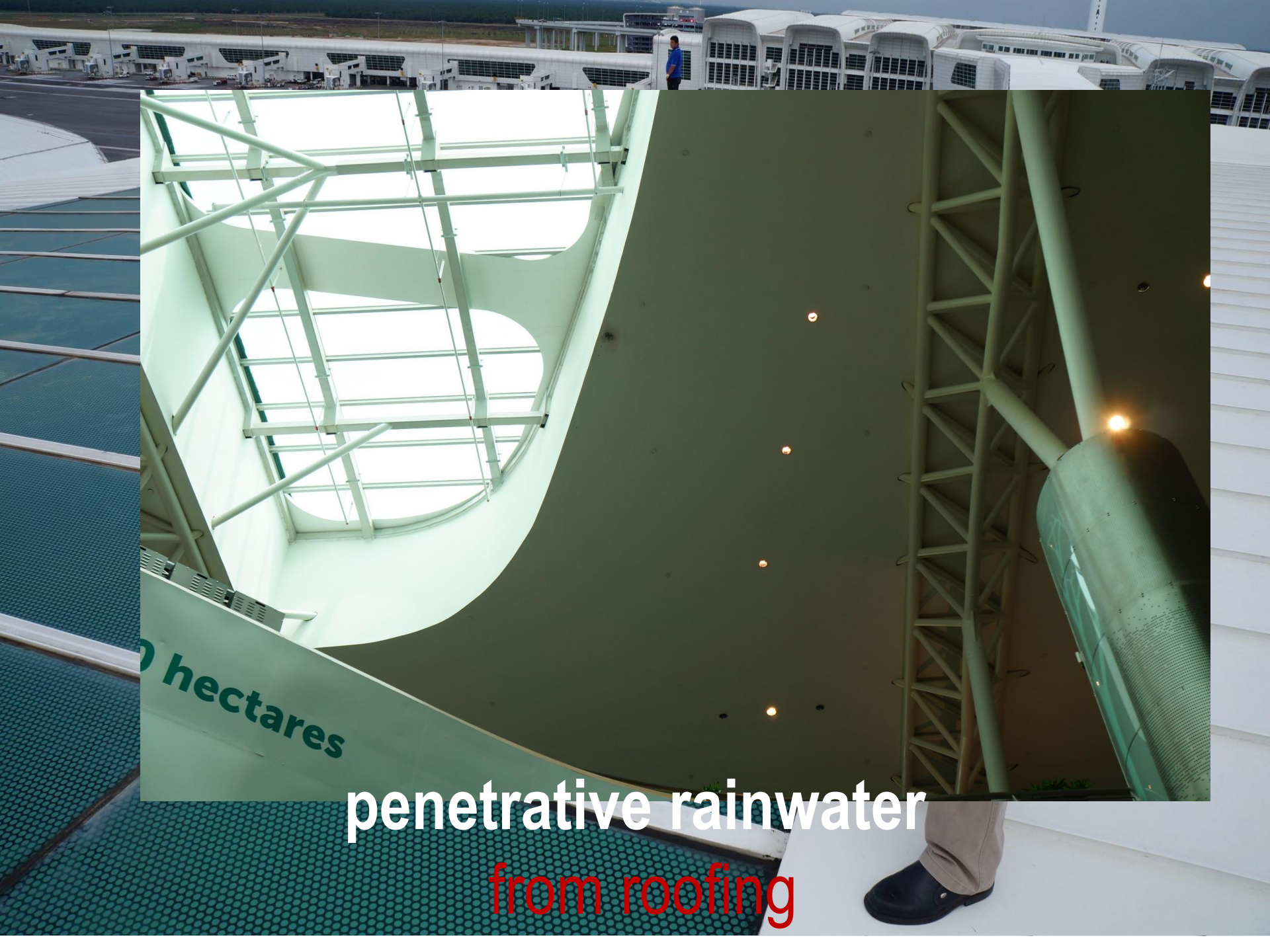
Fault Rating [XX]
Ph 33: Water leaks from overflowing eaves gutter. Water damaged electrical fittings.

thru concrete roof

thru concrete roof


penetrative rainwater
shop front into subfloor

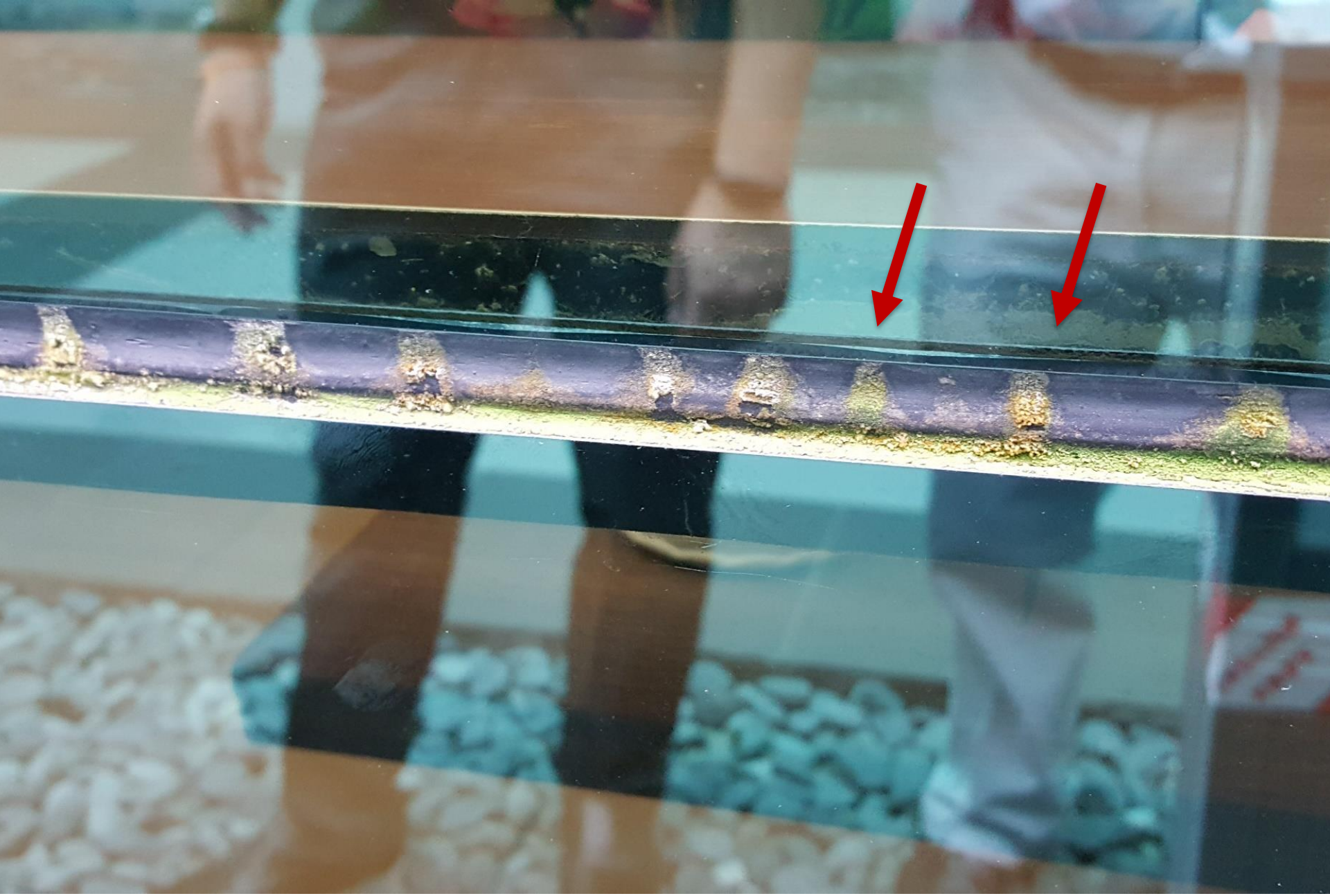

penetrative rainwater
shop front into subfloor



penetrative rainwater

from roofing

ACMV Dew Point Issues



Mold outside Glazing ?

Understanding
Mold / Spores… (yeast) Fungi naturally occurring

Needs… Food, right conditions for growing

Air (has air and water) and temperature decreases, ability to hold on to water decreases.. Rain is a good example

Moldpedia / Mold health Issues / External walls

Psychrometry

Water / Moisture

Inter-floor Leaks

wet areas, basements, concrete roof slabs

Building Envelope Leaks

walls, windows, glazing

ACMV

Dewpoint / Condensation

Operational Management

maintenance / change of use / alterations

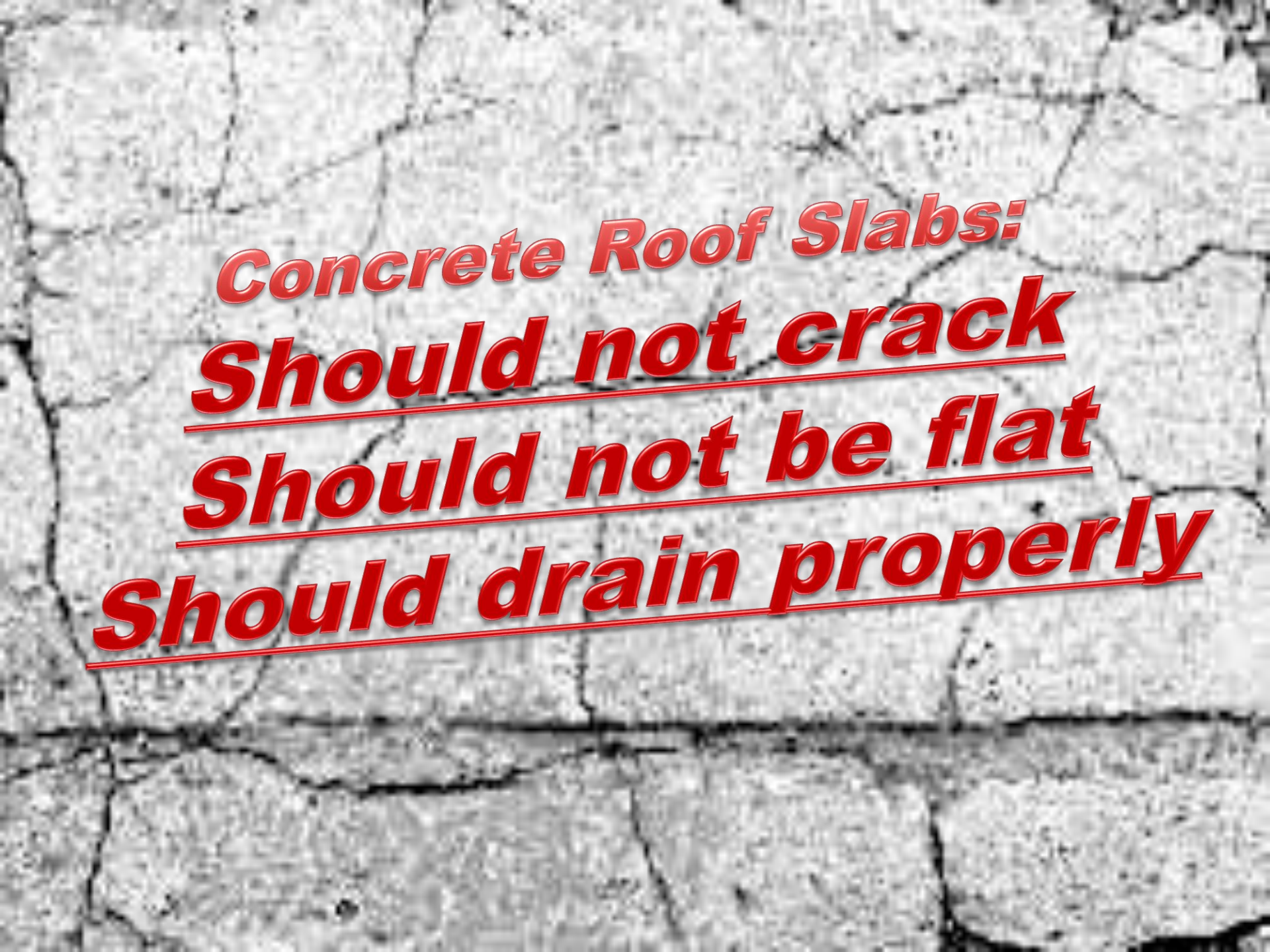
UBBL 1984

- **UBBL Bylaw 84** sub-clauses (1), (2), (3) (4) : *Prevention of Dampness (*applicable for damp proof courses, vertical basement walls and sub-structure)
  "..suitable measures shall be taken to prevent penetration of dampness and moisture into a building…"

- **UBBL Bylaw 115** : *Roof Coverings and drainage "All roofs of buildings shall be so constructed as to drain effectually to suitable and sufficient channels, gutters, chutes or troughs which shall be provided in accord. to these bylaws for receiving and conveying all water which may fall on and from the roof"*

Strata Management Act 2013

- SMA 2013 Regulations – **Part XV Clause 55** - *Inter-floor Leakage*


Concrete Roof Slabs:
Should not crack
Should not be flat
Should drain properly


Effects of
Construction Joints


Effects of
Construction Joints

RC FLAT ROOF

Bituminous membrane over defective screeding – ineffective.

Loose topping screeding.

No easy quick fix.

Hack Off and Start again.

Swimming Pool Deck - KLCC

Roof Screed specification?

Specification for Cement and Sand Mixture Content

Item	Project		Brick Mortar	Floor Screed	External Wall Plaster	Internal Wall Plaster	Backing to receive tiles (externally)	Backing to receive tiles (internally)
1	Melawati Mall		1 : 3	1 : 3	1 : 3	1 : 3		
2	Movenpick		1 : 6	1 : 3	1 : 6	1 : 6		
3	HUKM2		1 : 6	1 : 3	1 : 6	1 : 6		
4	Rapid P14		1 : 3	1 : 2½	1 : 3	1 : 3		
5	Riveria	BOQ	1 : 3	1 : 3	1 : 3	1 : 3	1 : 3 & 1 : 6	1 : 3 & 1 : 6
		SPEC	1 : 3	1 : 3	1 : 3	1 : 3	1 : 3	1 : 3
6	Affin Bank	BOQ	1 : 6	1 : 3	1 : 3	1 : 3	1 : 3	1 : 3
		SPEC	1:6 = above DPC 1:3 = below DPC	1 : 2	1 : 1 : 4 cement : hydrated lime : sand	1 : 1 : 4 cement : hydrated lime : sand	1 : 2	1 : 2
7	TRX	BOQ	1 : 3	1 : 3	n/a	n/a	1 : 3	1 : 3
		SPEC	1 : 3	1 : 3	n/a	n/a	1 : 3	1 : 3

*5 : Various mix found in the BOQ description.
*6 : BOQ description varies from the specification sheet.
*7 : Very Consistent. Technical performance requirement provided.

It's a mess!


RC kickers
Or
increase your drops

Do it right the 1st time.

Angle Fillet to corners
Fibre mesh to corners.

Finished waterproofing with RC kerbs, angle fillet, corner fibre reinforcement to walls and services and water proofing membrane.

Finished waterproofing with RC kerbs, angle fillet, corner fibre reinforcement to walls and services and water proofing membrane in BLUE !

Cementitious Waterproofing Membrane Comparison

	Company	**Bostik (M)**	Sika (M)	BASF (M)	CLP (M)	Fosroc	Estop	Grenseal	Mapei (M)
	Product Name	**Boscolastic**	SikaTop 109 MY	Barra Lastic	CL-Pruf 505	Brushbond FLXIII	Estokote Flexi	Flexi 201	MapeLastic
Properties	Standard								
Tensile Strength (N/mm^2)	ASTM D 412	**1.5**	1.2	1.43	1.59	1.98	> 1.8	2.42	
Elongation at Break (%)	ASTM D 412	**248.4**	> 100		200	180	150		
Adhesion to Concrete (N/mm^2)	ASTM D 4541	**1.5**	0.7	0.51	0.69	0.85	> 1.0	1.15	1.1
Crack Bridge (mm)	ASTM C 836	**2**			2	4.02	2		0.8
Resistance to Water Penetration 0.2kgf/m^3 for 6 hours	DIN 1048 Part 5	**0**	0	0	0	0	0		
Hardness Shoe A	ASTM D 2240	**53**	> 80		65	79	60		
Packing (kg/set)		**35**	36	36	42	24.8	33	28	32
Part A (kg) - Liquid		**15**	10	10	17	10	10	8	8
Part B (kg) - Powder		**20**	26	26	25	14.8	23	20	24
Mixing Ratio - Part A : Part B		**1 : 1.33**	1 : 2.6	1 : 2.6	1 : 1.47	1 : 1.48		1 : 2.5	1 : 3
Part A (kg) - Liquid - Solid Content (%)									

KISAH BENAR :
Waterproofing For Toilets, Flat Roof

Whose Scope...

The BLUE PIPES !

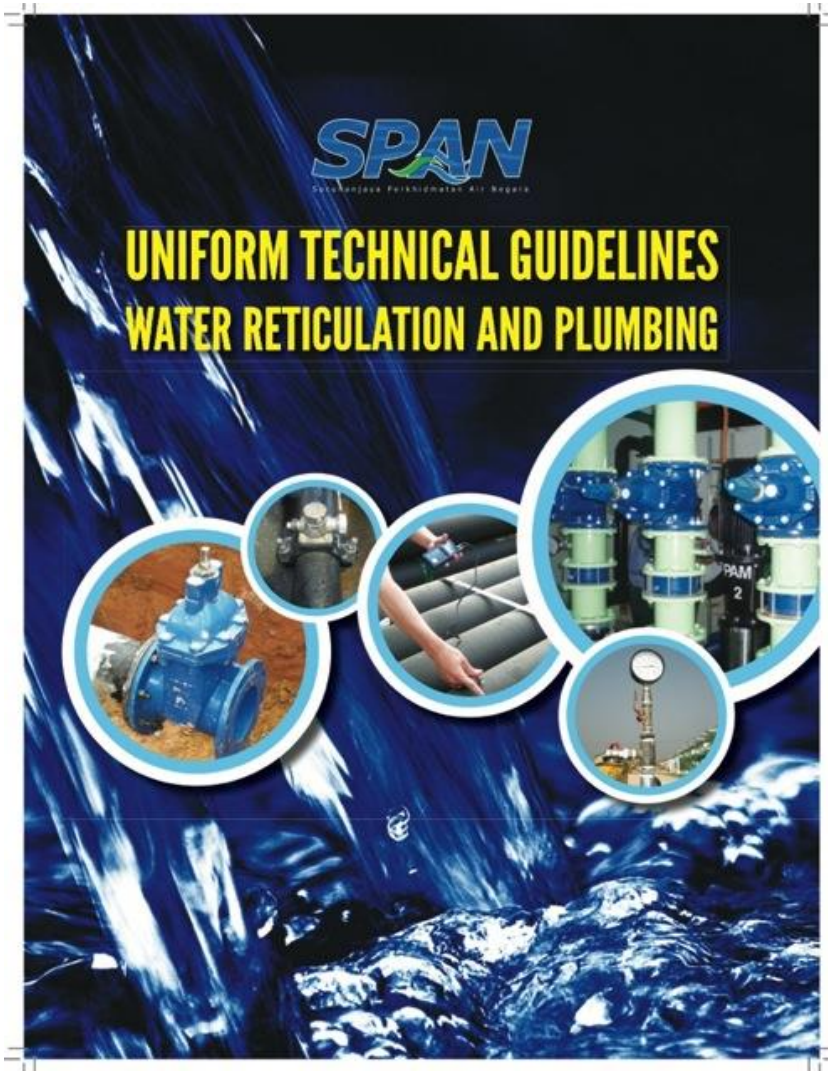
ABS is still approved for use in Malaysia by SPAN

ABS

ABS is still approved for use in Malaysia by SPAN

ABS

AWAS - Masih diluluskan oleh SPAN



Items	Standard Number	Standard Title
(viii) Solvent cement for UPVC piping system	MS 628 : Part 2 : Section 2.2 : 1999	Specification for Unplasticised PVC (UPVC) Pipes for Water Supply : Part 2 : Joints and Fittings for Use with Unplasticised PVC Pipes : Section 2.2 : Solvent Cement
(ix) Chlorinated Polyvinylchloride (cPVC) Pipes	MS 2045 : 2007	Chlorinated Poly (Vinyl Chloride) (PVC-C) Plastic Hot-and-Cold-Water Distribution Systems – Specification
	ASTM D2846 / D2846M – 09b	Standard Specification for Chlorinated Polyvinyl Chloride (cPVC) Plastic Hot and Cold Water Distribution System
	MS 1757 : Part 1 : 2008	Chlorinated Poly (Vinyl Chloride) (PVC-C) – Plastic Piping System – Part 1 : Specification for Schedule 40 & 80 Pipes
(x) Acrylonitrile-Butadiene-Styrene (ABS) Pipes	MS 1419: Part 1: 2007	Acrylonitrile-Butadiene Styrene (ABS) Piping Systems for Pressure Applications – Part 1: Specification for Compounds, Pipes and Fittings (First Revision)
	AS/NZS 3518 : 2004	Acrylonitrile Butadiene Styrene (ABS) Compounds, Pipes and Fittings for Pressure Application
(xi) Solvent cement for ABS piping system	MS 1419 : Part 3 : 1997	Specification for Acrylonitrilebutadiene Styrene (ABS) Pipes and Fittings for Pressure Applications Part 3 : Solvent Cement and Priming (Cleaning) Fluids for Use with ABS Pipes and Fittings
	MS 2286-2: 2012	Plastics Piping Systems for Hot and Cold Water Installations – Polypropylene (PP)- Part 2: Pipes (ISO 15874-2: 2003, AMD.1: 2007, MOD)

Kisah Benar:

Property Inspection . Building Forensics

Bits that we SEE
Bits We do NOT

Bits nobody ever see
Bits nobody ever wants You to See !

Architect centre

Mismatched Priorities & Implementation

Design & Development Teams
Construction & Handing Over

Get it right or wrong 1st time

Management & Maintenance
Additions & Renovations

Get it right / wrong again

Speed Kills Quality

‘steroids’

Cost Driven Decisions

‘cuci tangan’

Architect centre

Inherit

FUTURE

of Defects

EdgeProp.my TALK

Building for 'wellness'

KISAH BENAR

How SICK can a BUILDING be ?

Malaysia's Leading Property Inspection & Building Advisory Service Provider

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PAM PERTUBUHAN ARKITEK MALAYSIA MALAYSIAN INSTITUTE OF ARCHITECTS

LIFE-CYCLE COST OF A BUILDING

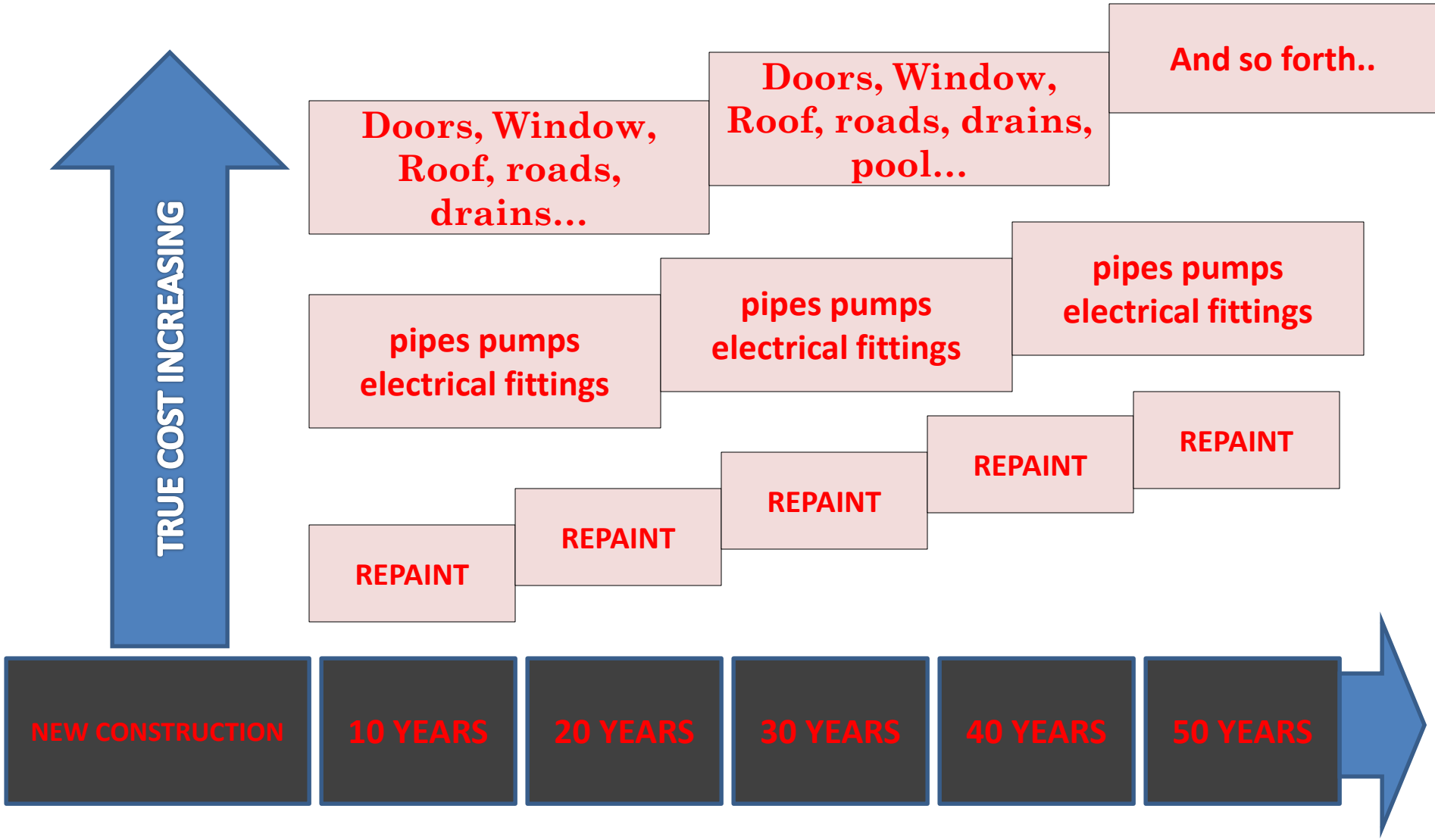
UP TO **25%**

OF A BUILDING'S LIFE-CYCLE COST IS **FINANCING AND CONSTRUCTION**

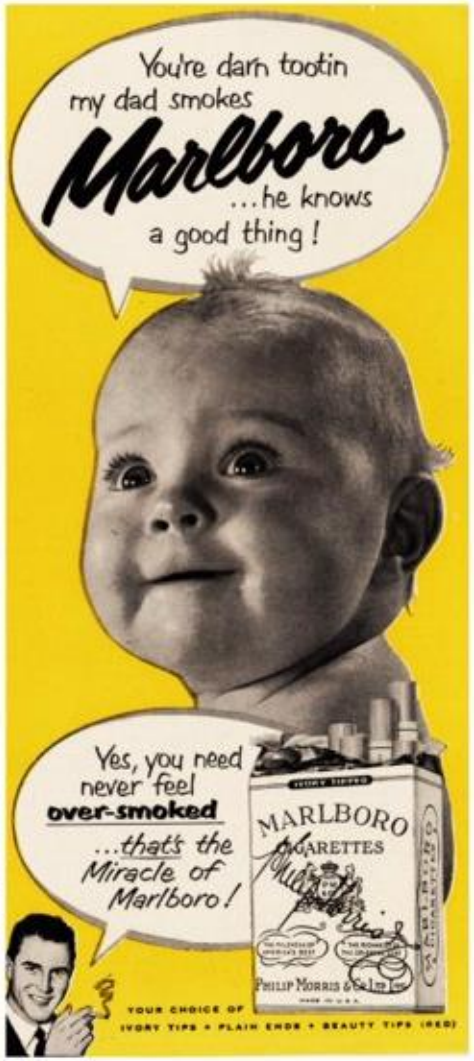
UP TO **75%**

OF A BUILDING'S LIFE-CYCLE COST IS **OPERATIONAL**

Life Cycle (Aging)




My
moke
a
ro
LBORO
RETTES


You're darn tootin
my dad smokes
Marlboro
...he knows
a good thing!
Yes, you need
never feel
over-smoked
...that's the
Miracle of
Marlboro!
MARLBORO
CIGARETTES
PHILIP MORRIS
YOUR CHOICE OF
IVORY TIPS • PLAIN ENDS • BEAUTY TIPS (RED)


Gee, Dad, you alwa
the best of every
...even
Marlbo
Yes, you need
never feel
over-smoked
....that's the
Miracle of
Marlboro!
YOUR CHOICE OF IVORY TIPS •
PLAIN ENDS • BEAUTY TIPS


He's one of the busiest men in town. While his door may say Office Hours 2 to 4, he's actually on call 24 hours a day.
The doctor is a scientist, a diplomat, and a friendly sympathetic human being all in one, no matter how long and hard his schedule.
According to a recent Nationwide survey:
MORE DOCTORS SMOKE CAMELS
THAN ANY OTHER CIGARETTE
DOCTORS in every branch of medicine—113,597 in all—were queried in this nationwide study of cigarette preference. Three leading research organizations made the survey. The gist of the query was—What cigarette do you smoke, Doctor?
The brand named most was Camel!
The rich, full flavor and cool mildness of Camel's superb blend of costlier tobaccos seem to have the same appeal to the smoking tastes of doctors as to millions of other smokers. If you are a Camel
CAMEL
Your "T-Zone" Will Tell You...
T for Taste...
T for Throat...
that's your proving ground for any cigarette. See if Camels

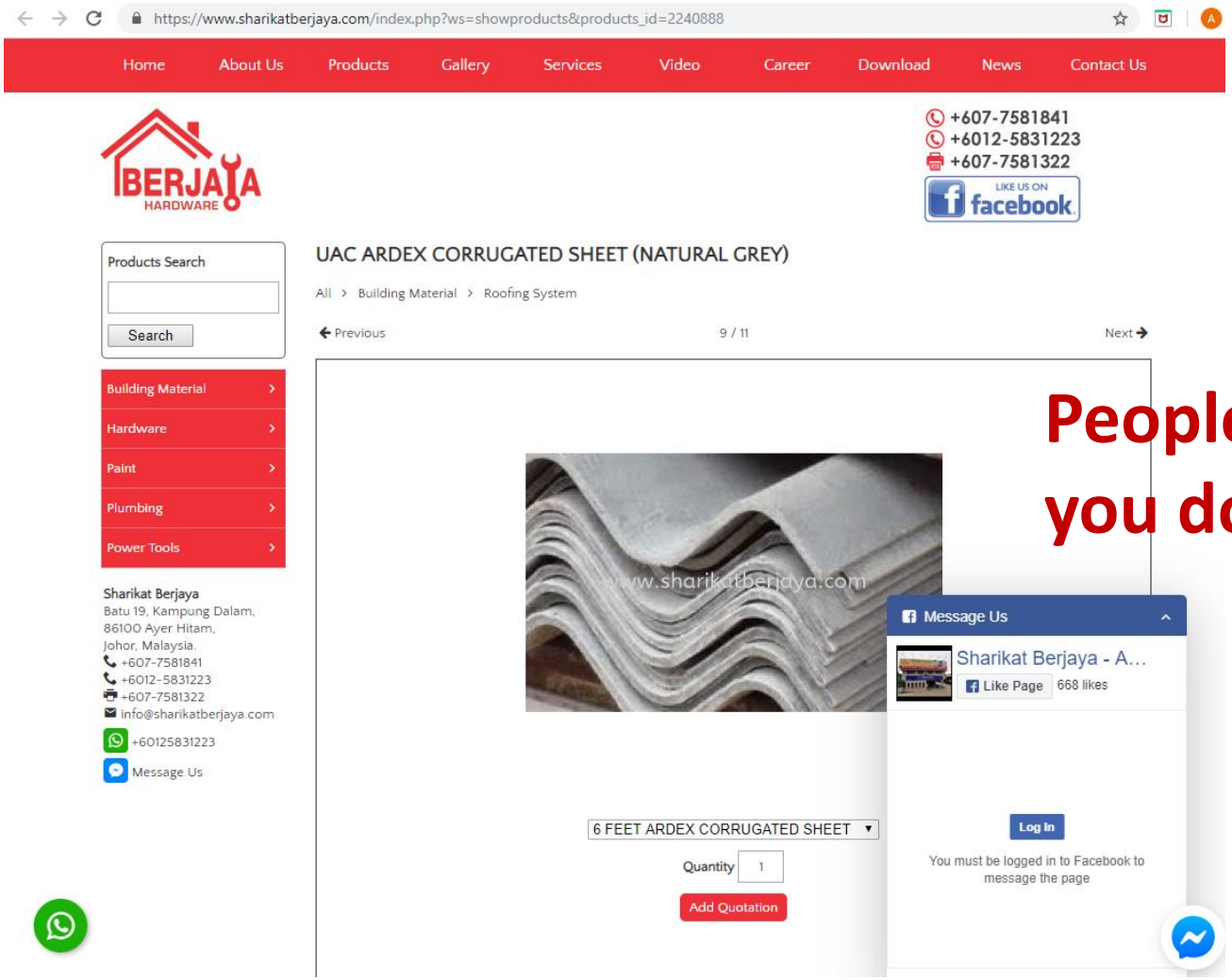
People that don't know what they don't know

ASBESTOS Sheets

still legally made & sold in Malaysia


Never cut asbestos with an angle grinder causes lots of dust
Never cut asbestos with an angle grinder!


Never smash asbestos into small pieces



People that wish you don't know

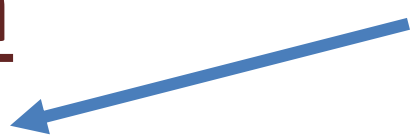
INDOOR vs OUTDOOR
AIR **POLLUTANTS**

2X to 5X HIGHER

Proper Ventilation & Reduce

source of pollution

indoors in the first place



Source: https://www.ewg.org/healthyhomeguide/glossary/

INDOOR AIR POLLUTANTS from **BUILDING MATERIALS**

‘dirty details… more than mold’

Asbestos – still here!

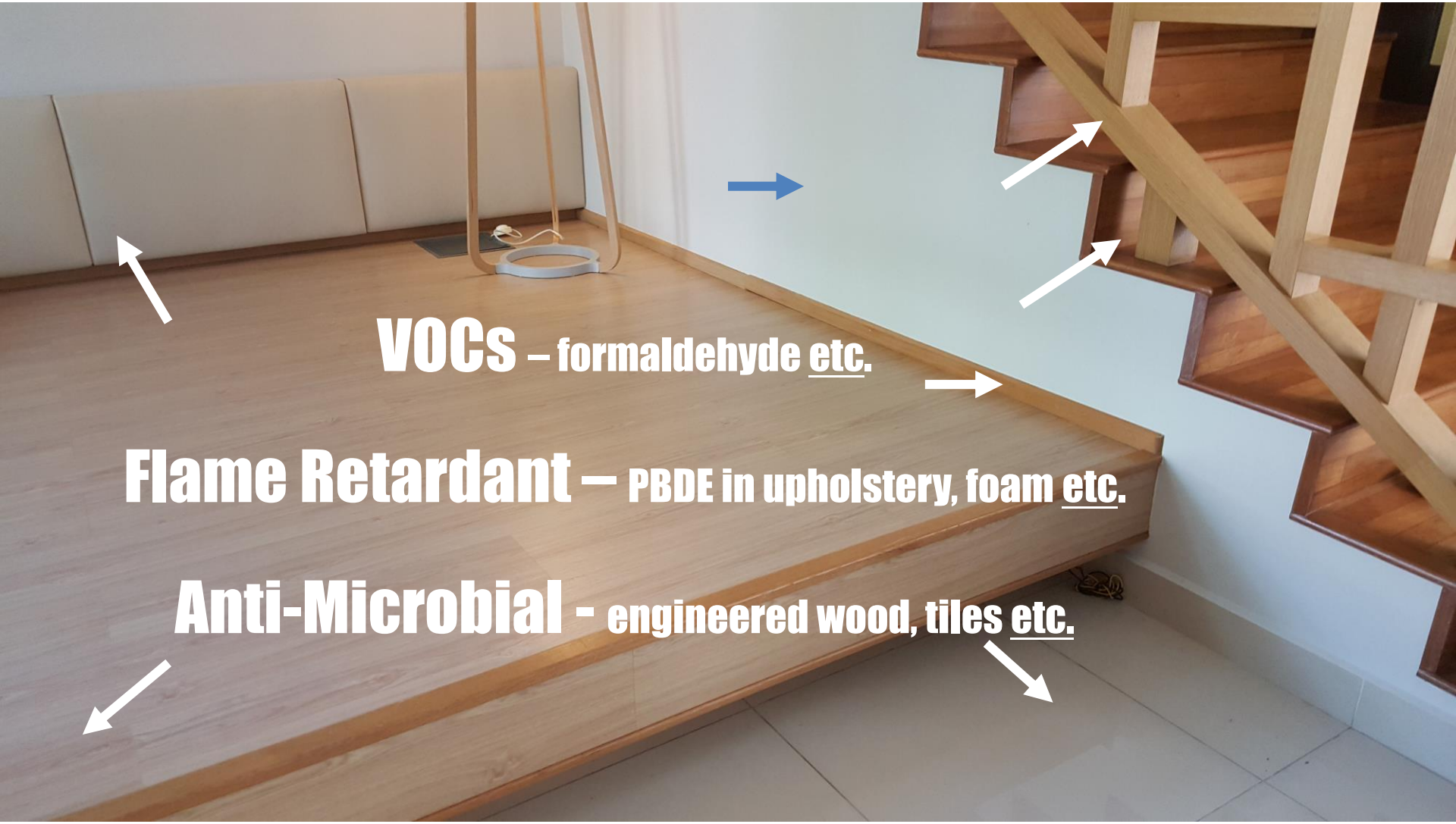
VOCs – formaldehyde etc.

PVC - pipes, windows, fabric etc.

PFC - carpets, fabric etc.

Anti-Microbial - engineered wood, tiles etc.

Flame Retardant – PBDE in upholstery, foam etc.


VOCs – formaldehyde etc.
Flame Retardant – PBDE in upholstery, foam etc.
Anti-Microbial - engineered wood, tiles etc.

it is easy to blame the Contractor

“We all seem to accept poor standards because we regard that buildings are build by low calibre people.
The developer & designers are not low calibre, the supervising professionals are not low calibre, but somehow the product is?”

Observations from couple living in KL under the MM2H program whose property has experienced significant unresolved defects.

Architect centre

SUB-SOIL DRAINAGE
ELECTRICAL SAFETY OR DEADLY
WATER LEAKS INTO BASEMENTS
STRUCTURAL CRACKS
INDOOR AIR POLLUTANTS
FIRE FIGHTING SYSTEMS
WATERPROOFING
WORKMANSHIT
WHY ARE MY TILES POPPING
INFRARED THERMOGRAPHY
COMMON AREAS DEFECTS
WHAT IS SAFETY GLASS
HANDRAILS
DAMPNESS IN BASEMENTS
TRY MIXING WATER & ELECTRICITY
ENERGY EFFICIENT BUILDINGS
ABS PIPES – DAY & NIGHTMARE
ENERGY MANAGEMENT SYSTEMS
COMPLIANCE INSPECTIONS
PRE PURCHASE INSPECTIONS
DEFECTS LIABILITY PERIOD
LANDMARK CASES
FIRE STAIRCASES OR DEATH TRAP
FIRE DOORSETS - MODIFICATIONS
INTERFLOOR LEAKS
STRATA MANAGEMENT ACT
SLOPE MAINTENANCE
ELECTRICAL FIRES
WATER LEAKS INTO BASEMENT

JMB ISSUES
STRUCTURAL CRACKS
INDOOR AIR POLLUTANTS
CHILD PROOFING YOUR HOME
LEAKING BATHROOMS
MORE WORKMANSHIT
BS STANDARDS
MORE INFRARED THERMOGRAPHY
PAINTING WARRANTIES
SECTION 85A : STRUCTURAL INSPECTION
UNIFORM BUILDING BYLAWS
MOLD & ALGAE
VOLATILE ORGANIC COMPOUNDS
ROOF LEAKS, YET AGAIN…
CRASHING PLASTER CEILINGS
SORRY LAH, WARRANTY PERIOD OVER
LIFE CYCLE INSPECTIONS
SINKING FUND PLAN
300MAmp vs 30MAmp
HOT WATER SAFETY
HOLLOW SOUNDING TILES
SWIMMING POOL LEAKS
EFFLORESCENCE
PAINTERS PLEASURE AND PAIN

Latent Defects

KISAH BENAR : TRAINING SERIES

a publication of PAM PERTUBUHAN AKITEK MALAYSIA *MALAYSIAN INSTITUTE OF ARCHITECTS*

RE-PAINTING FOR EXISTING EXTERNAL MASONRY WALLS

PAM Practice Notes

May 2011
Serial No.: 1-2011

CRACKS TO MASONRY WALL

EFFLORESCENCE

MILDEW ALGAE FUNGI

DAMPNESS

PEELING

HIGH DIRT RETENTION

CONCRETE SPALLING

EQUIPMENT USED FOR FAULT DIAGNOSIS

PERTUBUHAN AKITEK MALAYSIA • *MALAYSIAN INSTITUTE OF ARCHITECTS*
4 & 6 Jalan Tangsi 50480 Kuala Lumpur or P. O. Box 10855 50726 Kuala Lumpur Malaysia
t 03-2693 4182 f 03-2692 8782 e info@pam.org.my w www.pam.org.my

GUIDE FOR RE-PAINTING OF EXISTING EXTERNAL MASONRY WALLS

COMMON FAULTS AND DEFECTS TO EXISTING EXTERNAL MASONRY WALL	DIAGNOSIS AND DESCRIPTION OF FAULTS (INEXHAUSTIVE)		SURFACE PREPARATION (MAY VARY ACCORDING TO SITE CONDITIONS)	REPAINTING SYSTEMS
	DESCRIPTION OF FAULT AND DEFECTS	POSSIBLE CAUSES		
CRACKS TO EXTERNAL WALLS				
HAIRLINE	Fine surface cracks, crazed lines, egg shell pattern may or may not be hollow or delaminated. Diagnosis with DG1 & DG3	Incorrect plastering mix, excessive thickness resulting in shrinkage during curing. Vibrations.	SP1 or SP5 depending on severity, hollow or delaminated condition	RP1, RP2, RP3.
CONCRETE SPALLING	Insufficient cover to RC. Increased frequency particularly in wet areas. Diagnosis with DG1, DG2, DG3, DG4, D6, DG8	Incorrect concrete cover during concrete casting or post-casting hacking.	SP1 or SP2, SP9	RP1, RP2, RP3.
PLASTERING <2MM WIDTH	Surface cracks diagonal or crazed lines may or may not be hollow or delaminated. Diagnosis with DG1, DG2, DG3, DG5	Incorrect plastering mix, excessive thickness resulting in shrinkage during curing. Incomplete brickwork workmanship.	SP1 or SP5 depending on severity, hollow or delaminated condition	RP1, RP2, RP3.
PLASTERING >2MM WIDTH	Surface cracks diagonal or crazed lines may or may not be hollow or delaminated. Diagnosis with DG1, DG2, DG3, DG5	Incomplete brickwork workmanship. Settlement of structure. Differential settlement, movement.	SP1 or SP2, SP7, SP8, SP9 depending on severity, hollow or delaminated condition	RP1, RP2, RP3.
SHRINKAGE BETWEEN WALL & RC	Surface cracks horizontal or vertical lines may or may not be hollow or delaminated. Diagnosis with DG1, DG2, DG3, DG5	Incomplete brickwork workmanship. Shrinkage between RC and masonry wall.	SP1 or SP2, SP6, SP8, SP9 depending on severity and location	RP1, RP2, RP3.
HOLLOWNESS TO WALL PLASTERING				
PLASTERING (over masonry or concrete surfaces)	Hollowness to plastering may be seen with or without visible cracks. Diagnosis with DG1, DG2, DG3, DG8.	Incomplete plastering workmanship. Shrinkage between RC and masonry wall. Settlement, moisture, shrinkage or vibrations.	SP1 or SP2, SP5, SP8 depending on severity and location	RP1, RP2, RP3. (RP4 if applicable)
DAMPNESS TO EXTERNAL WALLS				
LEAKS FROM WET AREAS	Lateral or falling damp, leaks, moisture leading to stains, algae, fungi, delamination, hollowness, peeling, efflorescence. Diagnosis with DG4, DG8	Incomplete or damaged waterproofing, lack of DPC, burst fittings, damaged roofing, concrete integrity (honeycombing, cracks, cold joints).	SP1 or SP2, SP3, SP4 depending on severity and location	RP1, RP2, RP3. Only after leaks are mitigated.
PONDING AT LEDGES & SILLS	Ponding leading to stains, algae, fungi, delamination, hollowness, peeling, efflorescence. Diagnosis with DG1, DG2, DG4, DG8	Insufficient gradient or falls, lack of regular maintenance.	SP1 or SP2, SP3, SP4 and General Contractor to provide sufficent gradient for ledges & sills. General maintenance.	RP1, RP2, RP3. Only after ponding is mitigated.
MILDEW ALGAE FUNGI	Lateral or falling damp, leaks, ponding, moisture leading to stains, algae, fungi. Diagnosis with DG1, DG2, DG4, DG8	Incomplete or damaged waterproofing, lack of DPC, burst fittings, damaged roofing, concrete integrity (honeycombing, cracks, cold joints), continuously high humidity and temperature, limited ventilation, cracks.	SP1 or SP2, SP3, SP4	RP1, RP2, RP3. Only after leaks, ponding or other causes are mitigated.
PAINT FAILURE TO EXTERNAL WALLS				
EFFLORESCENSE	Crusty white salt deposit seen as whitish fluffy stains, which causes damage to colour pigment. Diagnosis with DG1, DG2, DG4, DG7	Leeching of dissolved salts from mortar, bricks, concrete and plastering through cracks and hollowness in wall plastering. Adulteration of primer coat.	SP1, SP5, SP6, SP7 or SP8	RP1, RP2, RP3. only after cracks and other causes are mitigated.
CHAULKING	Loose powdery white deposits on wall surfaces. Diagnosis with DG1, DG2, DG4, DG7	Adulteration of primer and top layer coating systems with calcium carbonate powder or other substances.	SP1 or SP2 depending on severity	RP1, RP2, RP3.
PEELING	Loss of adhesion between coats or between primer and masonry wall. Diagnosis with DG1 DG2, DG5	Application not to manufacturer's specifications, seepage of water, cracks, incorrect surface preparation, application over wet surfaces(>14%WME).	SP1 or SP2 depending on severity, SP4 if required	RP1, RP2, RP3.

LEGEND AND ABBREVIATION

DIAGNOSIS METHODOLOGY, TOOLS AND INSTRUMENTS

- **DG1** Visual inspection (within 3 m height)
- **DG2** High level visual inspection with safe access
- **DG3** Tapper rod for hollowness and cracks
- **DG4** Protimeter (%WME)
- **DG5** Water jet cleaning (< 1.5 Bar)
- **DG6** High pressure water jet cleaning (> 1.5 Bar)
- **DG7** PH paper
- **DG8** Thermographic camera

HIGH LEVEL ACCESS - (SITE CONDITION WILL DETERMINE THE APPROPRIATE EQUIPMENT)

- **AC1** Ladder
- **AC2** Skylifts
- **AC3** Scaffoldings
- **AC4** Scan climbers
- **AC5** Gondola
- **AC6** Elevated platforms
- **AC7** Building maintenance unit (bmu)
- **AC8** Other specialists access equipment

SURFACE PREPARATIONS

- **SP1** Wash surface with high pressure water jet Cleaning (< 1.5 Bar)
- **SP2** Wash surface with high pressure water jet cleaning (>1.5 Bar) to remove existing paint coatings, peeling paint and loose plaster.
- **SP3** Soak surface with low toxicity bacteria, algae, fungi pre-treatment mixture, rinse thoroughly with clean water.
- **SP4** Repair waterproofing and mitigate migration of all types of water & dampness from source (leaking bathroom slabs, balcony, rc flat roof, broken rwdp, gutters, eaves, spout pipes etc.
- **SP5** Cut out loose, hollow and delaminated wall plastering; re-plaster with premixed non-shrink grouting wall plaster to manufacturer's specification
- **SP6** Diamond wheel cut out 50-100 mm wide wall plastering (>2mm crack width) between RC and masonry wall, install high-ribbed mesh over cracks, re-plaster with premixed non-shrink grouting wall plaster to manuf specification
- **SP7** Diamond wheel cut out large wall cracks (>2mm crack width) pressure grout cracks to specialists specifications; re-plaster with premixed non-shrink grouting wall plaster to manufacturer's specification
- **SP8** Wall repairs to specialist's methodology applicable for serious faults found in external wall plastering
- **SP9** Concrete repairs to specialist's methodology applicable for spalling and faults found in concrete

RE-PAINTING SYSTEMS

- **RP1** Alkaline resistant primer coat
- **RP2** Patch coat 'bridging' membrane to affected areas
- **RP3** 2 coats of complementary premium grade acrylic external wall coating system
- **RP4** 1 coat of textured spray tile to match existing wall surface where applicable only

LIMITATIONS AND EXCLUSIONS

1. Guide applicable for external masonry wall using conventional method of construction. Not applicable for internal wall surfaces
2. Severe conditions related to structural deficiencies resulting in paint failure refer to sp9 prior to other architectural remedy
3. Subject to specific manufacturer's specification, surface preparation, performance and product warranties
4. Faults and defects may exist in isolation or in combination, therefore a comprehensive condition assessment is recommended
5. Performance warranties are usually subject to acceptable surface preparation for re-painting works
6. For additional fault diagnosis information and details, refer to architect centre or www.architectcentre.com.my

What is good for building performance
may not be good to
humans, animals & environment

Considered selection of building materials
manufacture, lifespan and disposal

Design for Maintainability
accessibility for repairs and replacements
aesthetics over everything else?

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